WHAT IS CLAIMED IS:

1. An image processing method for evaluating matching between a template image and an input image by use of a similarity value map, comprising:

generating a first evaluation vector for said template image;

generating a second evaluation vector for said input image; and

performing an even-number times angular transformation on a component of an edge normal direction vector of said first and second evaluation vectors.

2. An image processing method comprising:

inputting a specified image for a template image;

inputting a specified image for an input image;

calculating an edge normal direction vector of said specified image;

generating an evaluation vector from said edge normal direction vector;

subjecting said evaluation vector to orthogonal transformation;

performing a product sum calculation of corresponding spectral data for each evaluation vector that has been subjected to orthogonal transformation and has been obtained for said template image said input image;

subjecting a result of said product sum calculation to inverse orthogonal transformation and generating a map of similarity values; and

a formula of said similarity values, said orthogonal transformation, and said inverse orthogonal transformation each have linearity.

3. The image processing method of Claim 2, further comprising compressing each evaluation vector that has been subjected to orthogonal transformation so as to reduce a processing amount.

4. The image processing method of Claim 2, wherein for said template image, the steps taken until said evaluation vector that has been subjected to

orthogonal transformation is compressed are executed before said input image is input, and storing results thereof.

5. The image processing method of Claim 2, further comprising normalizing said evaluation vector with respect to a vector length.

6. The image processing method of Claim 2, further comprising normalizing said evaluation vector of said template image by the number of edge normal direction vectors.

7. The image processing method of Claim 2, further comprising:

reducing a data amount using complex conjugate properties of orthogonal transformation before performing a product sum calculation; and

restoring said data amount after performing said product sum calculation.

8. The image processing method of Claim 2, further comprising:

enlarging/reducing said template image to various sizes; and

subjecting said evaluation vector of each size to addition processing.

9. The image processing method of Claim 8, wherein, for said template image, said addition processing of said evaluation vector is carried out after executing said step of compressing each evaluation vector so as to reduce the processing amount.

10. The image processing method of Claim 2, wherein said template image is an image of a typified face.

11. The image processing method of Claim 2, further comprising:

preparing a peak pattern that makes a peak of said similarity value steep; and

subjecting data of said peak pattern to orthogonal transformation to said product sum calculation.

12. The image processing method of Claim 2, further comprising:

forming a mask pattern that depends on said template image; and

subjecting data of this mask pattern to orthogonal transformation to said product sum calculation.

13. The image processing method of Claim 12, wherein said mask pattern includes an average of a number of pixels in an image of said template image.

14. The image processing method of Claim 2, further comprising:

for said template image, processing positive and negative signs of said evaluation vector of said original template image; and

generating an evaluation vector of a bilaterally symmetrical image with respect to said original template image, by which said generated evaluation vector is applied to said product sum calculation.

15. The image processing method of Claim 10, further comprising generating a map of point biserial correlation coefficients on the basis of an extracted face image; and

responsive to said correlation coefficients, calculating a position of said face part.

16. The image processing method of Claim 10, further comprising:

calculating a distribution of projection values in a y-direction on the basis of said extracted face image by use of said mask pattern;

calculating two maximum points from said distribution; and

outputting a range between said two maximum points as a mouth range.

17. The image processing method of Claim 10, further comprising:

dividing said input image into only said face image and parts other than said face image on the basis of said extracted face image;

embedding a digital watermark only into said face image;

combining said face image into which said digital watermark has been embedded with parts other than said face image to produce a combined result; and

outputting said combined result.

18. The image processing method of Claim 10, further comprising:

dividing said input image into only said face image and parts other than said face image on the basis of said extracted face image;

editing only said face image;

combining said face image after editing with parts other than said face image to produce a combined result; are

outputting said combined result.

19. An image processing apparatus comprising:

a template image processing part;

said template image processing part including means for inputting a template image and calculating an edge normal direction vector of said template image, generating an evaluation vector from said edge normal direction vector, subjecting said evaluation vector to orthogonal transformation, and compressing said evaluation vector that has been subjected to said orthogonal transformation so as to reduce the processing amount;

an input image processing part;

said input image processing part including means for inputting an input image and calculating an edge normal direction vector of said input image, generating an evaluation vector from said edge normal direction vector, subjecting said evaluation vector to orthogonal transformation, and compressing said evaluation vector that has been subjected to said orthogonal transformation so as to reduce the processing amount;

multiplication means;

said multiplication means including means for performing a product sum calculation of corresponding spectral data about each evaluation vector that has been subjected to said orthogonal transformation and has been obtained for said template image and said input image; and

inverse orthogonal transformation means;

said inverse orthogonal transformation means including means for subjecting a result of said product sum calculation to inverse orthogonal transformation and generating a map of similarity values;

said evaluation vector including a component in which an edge normal direction vector of a specified image undergoes even-numbered times angular transformation, and a formula of said similarity values, said orthogonal transformation, and said inverse orthogonal transformation each have linearity.

20. The image processing apparatus of Claim 19, wherein said template image processing part includes a recording means for recording said evaluation vector that has been compressed to reduce a processing amount and that has been subjected to orthogonal transformation, and a result obtained by compressing said evaluation vector that has been subjected to orthogonal transformation is stored in said recording means before inputting said input image.

21. The image processing apparatus of Claim 19, further comprising:

a conjugate compression means, between said recording means and said multiplication means;

said conjugate compression means including means for reducing the data amount using complex conjugate properties of orthogonal transformation;

a conjugate restoring means;

said conjugate restoring means, between said multiplication means and said inverse orthogonal transformation means, including means for restoring the data

amount reduced by use of the complex conjugate properties of orthogonal transformation.

22. The image processing apparatus of Claim 19, further comprising:

an enlargement/reduction means for enlarging/reducing said template image to various sizes; and

an addition means for performing addition processing of said evaluation vector of each size.

23. The image processing apparatus of Claim 22, wherein said addition means includes means for performing addition processing of said evaluation vector of said template image after compressing said vector so as to reduce the processing amount.

24. The image processing apparatus of Claim 19, further comprising a peak pattern processing part for subjecting a peak pattern by which a peak of a similarity value is made steep to orthogonal transformation and compressing said peak pattern that has been subjected to said orthogonal transformation so as to reduce the processing amount, wherein a result obtained by subjecting data of this peak pattern to said orthogonal transformation is applied to a product sum calculation of said multiplication means.

25. The image processing apparatus of Claim 19, further comprising:

a mask pattern processing part; and

said mask pattern processing part including means for forming a mask pattern that depends on said template image and generating data obtained by subjecting data of this mask pattern to orthogonal transformation and by compressing it, wherein a processing result of said mask pattern processing part is applied to a product sum calculation of said multiplication means.

26. The image processing apparatus of Claim 25, wherein said mask pattern includes a mean of a number of pixels inside an image of said template image.

27. The image processing apparatus of Claim 20, further comprising:

a symmetric vector generation means;

said symmetric vector generation means including means for processing positive and negative signs of said evaluation vector of an original template image recorded in said recording means, and for generating an evaluation vector of a bilaterally symmetric image with respect to said original template image, wherein said evaluation vector generated by said symmetric vector generation means is applied to a product sum calculation of said multiplication means.

28. The image processing apparatus of Claim 19, further comprising a η map forming means for forming a map of a point biserial correlation coefficient on the basis of an extracted face image, and an extraction means for calculating a position of a face part from the formed map.

29. The image processing apparatus of Claim 19, further comprising a maximum point extraction means for calculating a projection value distribution in a y direction by use of a mask pattern on the basis of an extracted face image, and calculating two maximum points from this distribution, and outputting a range between said maximum points such as a mouth range.

30. The image processing apparatus of Claim 19, further comprising:

a face image cutting-out means for separating an input image into only a face image and parts excluding said face image on the basis of an extracted face image;

a digital watermark embedding means for embedding a digital watermark only into the face image; and

an image synthesizing means for combining said face image into which said digital watermark has been embedded with parts excluding said face image and outputting the combined data.

31. The image processing apparatus of Claim 19, further comprising:

a face image cutting-out means for separating an input image into only a face image and parts excluding said face image on the basis of an extracted face image;

an image correction means for editing only said face image; and

an image synthesizing means for combining an edited face image with parts excluding said face image and outputting them.

32. The image processing method of Claim 10, further comprising:

cutting out a face image from said input image on the basis of an extracted face image;

extracting a facial inner image from said face image that has been cut out;

calculating a feature that correct said face image on the basis of said extracted face image;

determining a correction function on said basis of said obtained feature; and

applying image correction based on said determined correction function at least onto said face image that has been cut out.

33. The image processing method of Claim 32, wherein said feature is a combination of at least two of brightness, chroma average, and hue average.

34. The image processing apparatus of Claim 19, further comprising:

face image cutting-out means for cutting out a face image from said input image on a basis of an extracted face image;

face internal range extraction means for extracting a facial inner image from said face image that has been cut out;

image feature extraction means for calculating a feature that serves to correct said face image on a basis of said extracted face image;

correction function determining means for determining a correction function on a basis of said obtained feature; and

image correction means for applying image correction based on said determined correction function at least onto said face image that has been cut out.

35. The image processing apparatus of Claim 34, wherein said feature is a combination of at least two of brightness, chroma average, and hue average.